

Assembly Instructions for Eurotunnel Shuttle Locomotive

History

The Channel Tunnel, running beneath the English Channel between Folkestone, England and Coquelles, France, opened in 1994. The tunnel is used by Eurostar passenger trains and roll-on/roll-off vehicle shuttles. Originally known as *Le Shuttle*, the shuttle train is now known as the *Eurotunnel Shuttle*. Two types of train are employed, one for freight vehicles using semi-open wagons, and another for passenger vehicles with enclosed wagons. The passenger shuttles comprise double-deck wagons for cars, and single-deck for buses and other large vehicles.

Both passenger and freight shuttles are hauled by Eurotunnel Class 9 electric locomotives. The locomotives were constructed between 1992 and 2002 by Brush Traction. They have a triple-bogie (Bo-Bo-Bo) wheel arrangement and are powered by 25 kV drawn through a pantograph from overhead lines. Two locomotives are used on each Shuttle train, one at either end, each having sufficient power to move the train should one locomotive fail.

In total 59 were manufactured. Locomotives of the first batch of 38 had a power output of 5760 kW. Later models are rated at 7000 kW, making them among the most powerful in the world, and the earlier locomotives are to be rebuilt giving them the same higher power. Most of the original 38 are named after famous opera singers.

The Model

This model builds into a 1:160 scale replica (N Gauge) of a Class 9/0 Shuttle locomotive in its original livery. A word of caution: the model is not suitable for assembly by young children, due to the use of sharp tools and the complexity of some assembly steps. Previous experience with card modeling is recommended. If you have any comments or suggestions regarding this kit, I can be reached by e-mail at models@currell.net

Model parts are contained in the document **shuttle_loco_parts.pdf**. Print out the parts document on 8.5"x11" or A4 size white card stock suitable to your printer. 67 lb. cover stock (approximately 8.5 thousandths of an inch or 0,2 mm thick) is recommended.

Tools

Before beginning, you will need the following tools and materials:

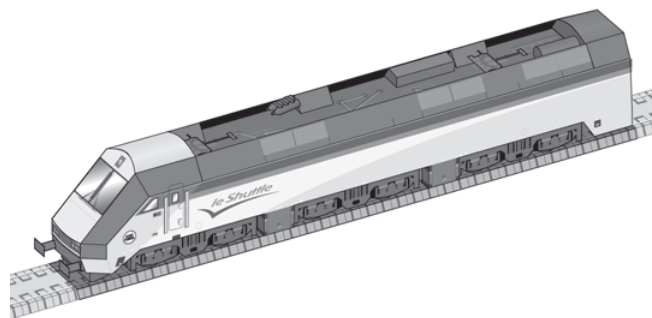
- white glue
- a glue applicator such as wooden toothpicks or a small paintbrush
- scissors (optional)
- a sharp knife for cutting
- a flat cutting surface (a cutting mat is recommended)
- a ruler or straight edge
- a scoring tool or blunt knife for creasing the fold lines

Hints

- Select a well-lit, comfortable work area that will remain undisturbed when you are not there.
- Keep your hands and tools clean when working, to avoid getting glue on visible parts of the model.
- It's easier to stay organized if you only cut out those parts you need for each step.
- Make sure your knife is sharp. When cutting straight lines, use a straight-edge. Scissors, if used carefully, can be used for large curved parts.
- Study the diagrams carefully, and always test-fit the parts before applying glue.
- You may wish to colour the edges of the parts to make seams less visible. Pencil crayon or paint applied with a fine brush can be used (experiment on scrap pieces to see what works best).

Assembly

In these instructions, scoring of parts is indicated by thin black lines outside the part's outline, and by dashed or shaded lines on the part's surface. Score parts *before* cutting them out. In the diagrams, subassemblies are identified by a number within a circle (e.g. ②), corresponding to the step in which it was assembled.



Steps 1 and 2 form the internal structure of the model. Take especial care that these parts are properly centred and straight when gluing.

Step 1: Score and cut out parts A1 to A5. Glue the internal structure to the locomotive floor as shown. Attach the top deck A6 as shown (**step 2**), ensuring the top rounded edges line up with those on the internal structure.

Score and cut out the side parts (**step 3**), referring to the drawing to ensure no scores are missed. Fold over and glue the top flaps (3 places). Carefully glue the sides to the locomotive structure, beginning at the front and working toward the rear (**step 4**). Use the small blue arrows printed on the floor to line up the front of the side pieces.

Fold the top flaps down (**step 5**), gluing the tabs into the slots on the top deck.

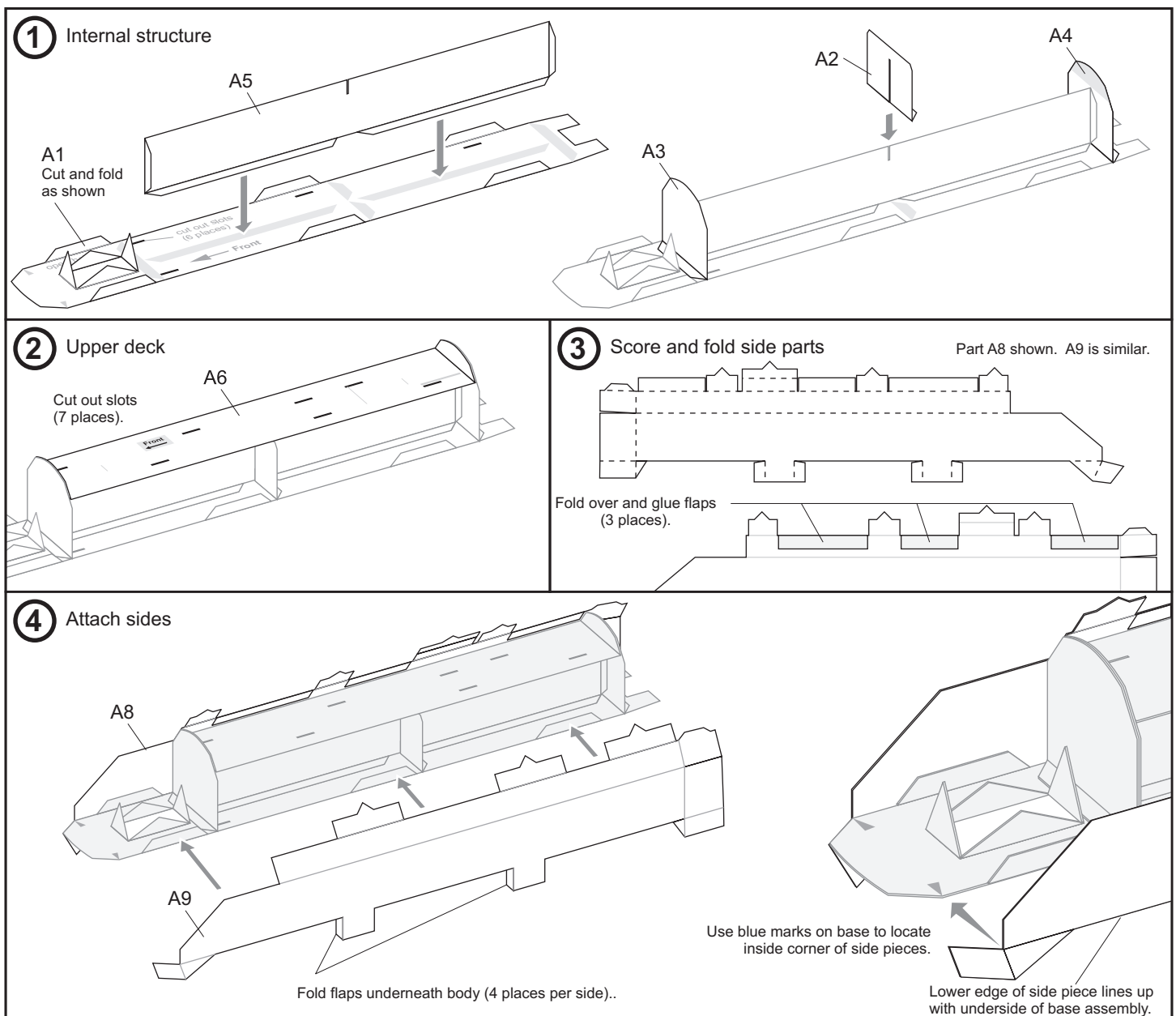
Glue the rear wall in place (**step 6**). Glue the flaps inside the side walls first, then attach the upper and lower side panels, and finally the roof panel. Note that the roof transitions from a straight edge to a curved shape.

Score and cut out the front A10 (**step 7**), referring to the drawing to ensure no scores are missed. Glue the inner flaps together to give the piece its proper shape. When dry, glue between the locomotive sides. If necessary a paint brush handle or similar small stick can be pushed through the hole at the bottom of the locomotive to assist in positioning this part.

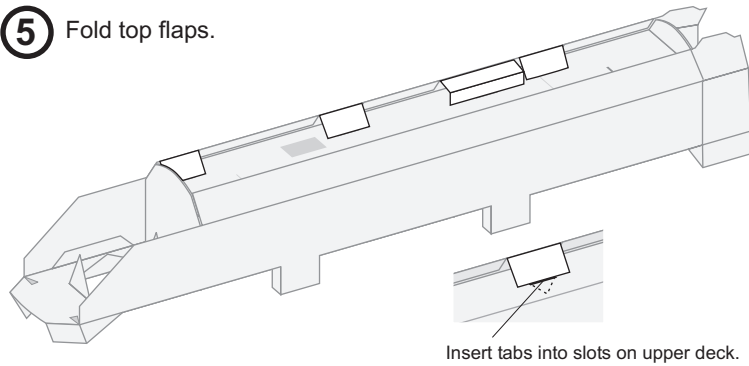
Score and fold the lower front chassis (**step 8**), gluing the tie plate A12 into place. Glue beneath the front of the locomotive and attach the bumpers as shown.

Assemble the front wheel bogie (**step 9**), and glue to the bottom of the locomotive (**step 10**). The two rear bogies are assembled and attached in the same manner.

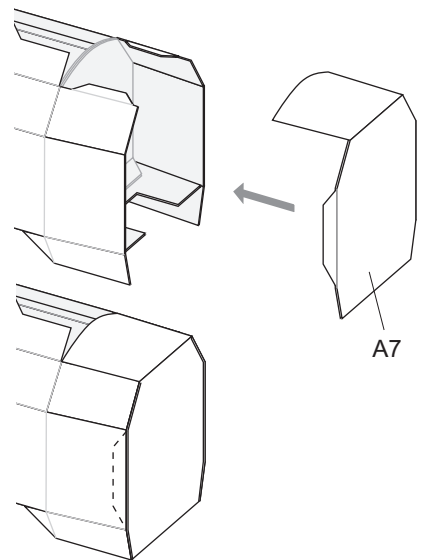
Assemble and attach the top detail pieces as shown in **step 11**. A track section (**step 12**) may be used to display the finished locomotive model.



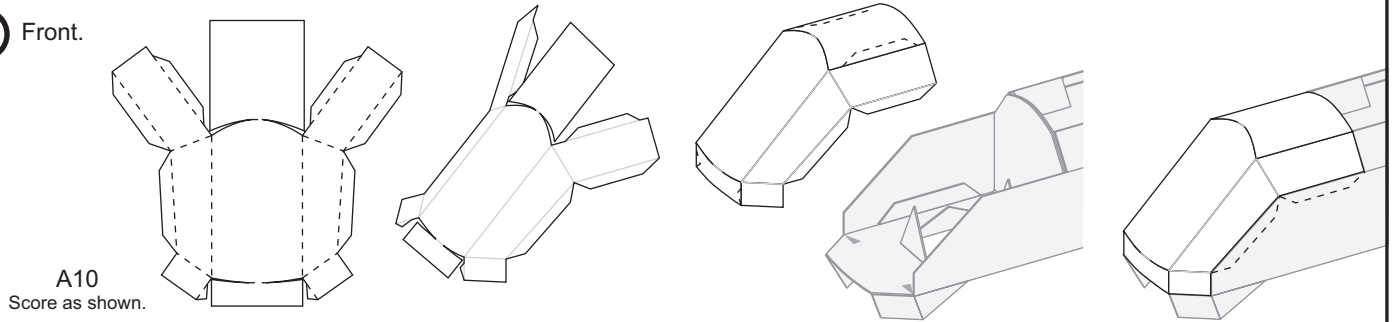
5 Fold top flaps.



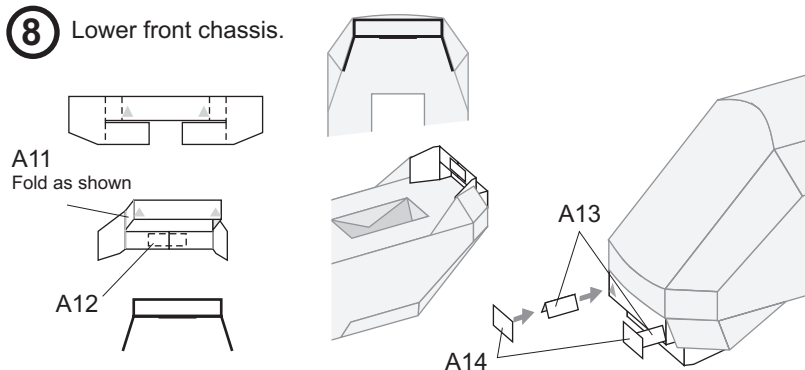
6 Attach rear wall.



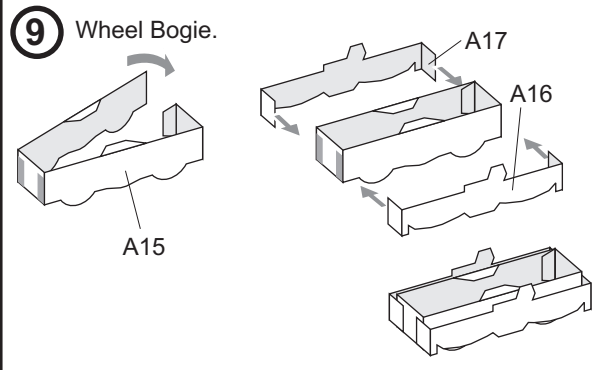
7 Front.



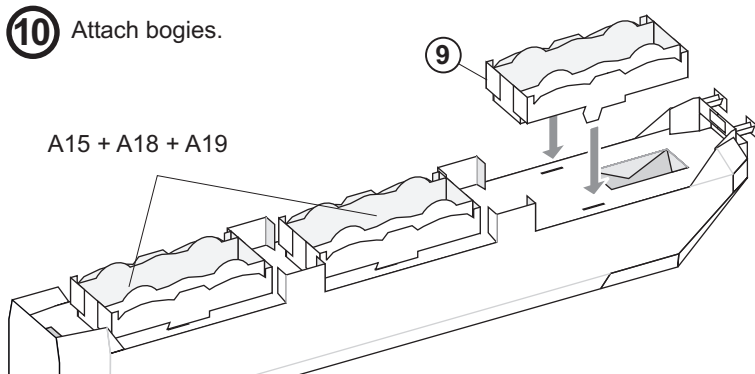
8 Lower front chassis.



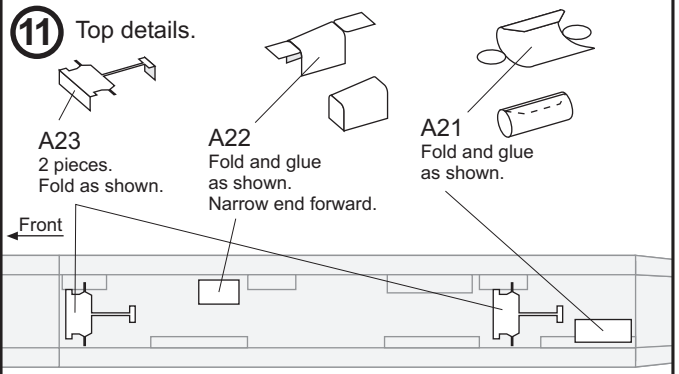
9 Wheel Bogie.



10 Attach bogies.



11 Top details.



12 Track.

